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Expensive they must have been and cumbersome also for these ropes measured seven and one-half inches in circumference. To protect this investment the ropes, although they were bound with cords and heavily tarred, were carefully taken in each Saturday night and not brought out again until Monday morning for the "Gravity" like the canal, did not operate on Sunday.

The ropes, while they greatly lessened the danger of runaway cars brought a new difficulty in that they were frequently slipping on the drums, particularly when they were wet and not until the expedient of connecting the idler drum to the driven drum, by means of a rope belt, was struck upon, did they overcome to a great extent this difficulty although that danger remained until years later when the huge ropes were replaced by the first steel cables made by John Roebeling.

The grade on the "levels" ranged between twenty-four and forty-four feet to the mile and here again the company met another difficulty for as the name of the road implies the cars were allowed to descend by gravity and their speed had to be controlled. Various schemes were tried, amongst them being an elaborate windmill affair, connected to the axles by ropes or belts and retarding the speed by friction. Of this contraption a contemporary wrote "it is a new and ingenious application, by Chief Engineer Jervis, of a known power, to the descending levels, which may well deserve the name of an invention." This idea was soon discarded and a simpe brake using the jressure of a bent sapling applied directly on the wheels came into general use.

The next improvement on the railroad was the addition of a 2x4 oak strip to the running edge on top of the original hemlock rails which were soon found to be too soft. The protecting strap iron was replaced on top of the oak and this arrangement served for many years.

During 1828 a young engineer, Horatio Allen by name, had become associated with the D. & H. and with Engineer Jervis, who was then planning the gravity railroad. This connection led to his being chosen in the fall of 182 8 to go to England to arrange for the purchase of four "locomotive engines" for use on the "Gravity" planes.

Gravity Scene